

(FILE 'HOME' ENTERED AT 11:37:45 ON 18 SEP 2007)

FILE 'REGISTRY' ENTERED AT 11:38:07 ON 18 SEP 2007

L1 STRUCTURE UPLOADED
L2 0 S L1 SSS SAM
L3 0 S L1 SSS FULL
L4 STRUCTURE UPLOADED
L5 0 S L4 SSS SAM
L6 0 S L4 SSS FULL

FILE 'CAPLUS, MEDLINE' ENTERED AT 11:40:44 ON 18 SEP 2007

L7 197 S MALEIMIDE (P) (CARBOHYDRATE OR TEMPLATE OR SCAFFOLD)
L8 82 S L7 (P) (SUGAR OR GALACTOSE OR CARBOHYDRATE OR SACCHARIDE)
L9 3 S L8 (P) MALEIMIDE CLUSTER

Maleimide

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Maleimide is the chemical compound with the formula $\text{H}_2\text{C}_2(\text{CO})_2\text{NH}$. This unsaturated imide is an important building block in organic synthesis. The name is a contraction of maleic acid and imide, the $-\text{C}(\text{O})\text{NHC}(\text{O})-$ functional group. Maleimides also describes a class of derivatives of the parent maleimide where the NH group is replaced with alkyl or aryl groups such as a methyl or phenyl. The substituent can also be a polymer such as polyethylene glycol. Human hemoglobin chemically modified with maleimide-polyethylene glycol is a blood substitute called MP4.

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Organic chemistry

Maleimide and its derivatives are prepared from maleic anhydride by treatment with amines followed by dehydration.^[1] A special feature of the reactivity of maleimides is their susceptibility to additions across the

double bond either by Michael additions or via Diels-Alder reactions. **Bismaleimides** are a class of compounds with two maleimide groups connected through a molecular unit and used as crosslinking reagents in polymer chemistry.

Biotechnology applications

Maleimides linked to polyethylene glycol chains are often used as flexible linking molecules to attach proteins to surfaces. The double bond readily reacts with the thiol group found on cysteine to form a stable carbon-sulfur bond. Attaching the other end of the polyethylene chain to a bead or solid support allows for easy separation of protein from other molecules in solution, provided these molecules do not also possess thiol groups.

Maleimide	
IUPAC name	Maleimide
Other names	2,5-pyrroledione
Identifiers	
CAS number	541-59-3 (http://www.emolecules.com/cgi-bin/search?t=ss&q=541-59-3&c=0&v=1)
Properties	
Molecular formula	$\text{C}_4\text{H}_3\text{NO}_2$
Molar mass	97.07 g/mol
Melting point	91-93
Solubility in water	organic solvents
Hazards	
R-phrases	25-34-43
S-phrases	26-36/37/39-45
Except where noted otherwise, data are given for materials in their standard state (at 25 °C, 100 kPa)	
Infobox disclaimer and references	

References

1. ^ Cava, M. P.; Deana, A. A.; Muth, K.; Mitchell, M. J. "N-Phenylmaleimide"Organic Syntheses, Collected Volume 5, p. 944 (1973). Online Article (<http://www.orgsyn.org/orgsyn/prep.asp?prep=cv5p0944>)

See also

- Succinimide

External links

- The MP4 website (<http://www.chm.bris.ac.uk/motm/mpg/>) Molecule of the Month December 2004

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Categories: Organic compounds | Organic compound stubs

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